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LEATHER FINISH

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This invention relates to a new and improved flexible leather finish and more particularly to leather, the surface of which has been treated with a coating comprising an albuminous material and a resin polymer.

In the leather industry, after the hides have been degreased, tanned and dyed, they are treated for the purpose of giving their surface an even finish having high gloss. It is necessary that this finish have good flexibility, stand a considerable elongation, resist abrasion and immersion in water and be water-repellent, although not moisture-proof, since water must be permitted to pass freely through the finishing coat. Despite the amount of work which has been done with finishes consisting mainly of cellulose derivatives, they have proven generally unsatisfactory largely because of poor adhesion and the fact that they do not permit the free passage of moisture. They are likewise somewhat deficient in retention of flexibility and elongation.

For a number of years the imparting of a finish to leather has been effected by the application of aqueous emulsions which are, for example, prepared from casein, albumin, shellac, wax and like materials. Finishing preparations of this type, however, are deficient in adhesion and in water-resistant properties and do not retain their flexibility for the desired period.

An object of the present invention is to provide a composition for the finishing of the surface of leather which overcomes the aforementioned defects. A further object is to provide a finished leather, the surface of which is characterized by the advantages of water repellency while allowing relatively free passage of moisture, improved adhesion, gloss, elongation and retention of flexibility. Yet another object of the invention is the provision of a composition of matter for finishing leather wherein the albuminous-water-dispersed leather finishes of the art are fortified by an aqueous emulsion of an ester of an alpha-substituted acrylic acid. Other objects and advantages of the invention will hereinafter appear.

These objects are attained according to the invention by adding to the conventional albuminous-water-dispersed leather finish an aqueous emulsion containing as an essential ingredient thereof an aqueous emulsion of a polymeric ester of an alpha-substituted acrylic acid and, preferably, the polymeric methacrylic acid esters of the aliphatic monohydric alcohols containing from 3 to 8 carbon atoms in the molecule and subsequently applying the resulting composition to the leather surface.

The more detailed practice of the invention is illustrated by the following examples, in which parts are given by weight unless otherwise stated. There are, of course, many forms of the invention other than this specific embodiment.

A. In the practice of the present invention a water-dispersed type of leather finish is prepared containing the following ingredients in substantially the proportions given:

Egg albumin	oz.	1½
Casein solution	oz.	3
Borax	oz.	¾
Shellac solution	oz.	4
Water to make	gal.	1

Pigment of the desired color and amount to give suitable covering power.

The casein solution is prepared by adding the casein to an equal quantity of water, the resulting solution being neutralized or made slightly alkaline with borax. The shellac solution is prepared in the proportion of 2 oz. of shellac to 16 oz. of water, the resulting solution being made neutral or slightly alkaline with borax. The casein and shellac solutions, together with the egg albumin and the remaining amount of borax are thoroughly mixed together with the required amount of water to make 1 gal., the mixing being of sufficient intensity and duration to form an emulsion. Into this emulsion the pigment, if used, may be gradually added with stirring. Titanium oxide, for example, may be used as the pigment and for the treatment of white work 3 lbs. of the oxide is first ground in a suitable oil such as castor oil to give a suitable dispersion of the pigment in the oil. The ratio of pigment to oil should range preferably between two parts of pigment to three parts of oil. The pigment dispersion is then added to the emulsion and the whole is thoroughly and uniformly blended by ordinary mixing processes. If desired, this composition may be further modified by the addition of from 5–15% of a water emulsion of a wax such as hydrogenated castor oil wax, carnauba wax or the like.

B. Another kind of a leather finish may be prepared by mixing 33⅓ parts of casein into 66⅔ parts of water. To this solution, with stirring, is added an equal volume of an aqueous solution containing 7% triethanolamine. The stirring is continued for a sufficient time to insure adequate emulsification.

C. An aqueous resin emulsion is prepared according to the following formula:

	Per cent by weight
n-Butyl methacrylate (monomer)	25.0
Benzoyl peroxide	.2
Water	74.0
Sodium lauryl sulfate	.8
	100.0

The above ingredients are placed in a closed

kettle provided with a jacket and agitator. Rapid agitation is applied for a time cycle of sufficient duration to provide emulsification. The resulting emulsion is heated to 60–90° C. for approximately two hours or until polymerization of the methacrylate monomer is effected.

A mixture consisting of 3 parts of either of the conventional type of albuminous-water-dispersed leather finishes A or B fortified with 2 parts of the methacrylate resin emulsion C is uniformly blended. This emulsion coating composition is sprayed or brushed upon a leather surface. Two or three coats are usually applied, each coat being allowed to dry at room temperature or force-dried at an elevated temperature before the application of the succeeding coat. Other methods of application are also utilized, such as swab coating or brush operations.

The example illustrates a conventional form of a water-dispersed type of leather finish containing a pigment, albumins and a modifying agent such as shellac, wax and the like. Such water-dispersing leather finishes are well known in the art. Their composition, however, is by no means fixed for each leather finisher employs a water dispersion which his experience leads him to believe is most desirable. For convenience in referring, therefore, to these water-dispersed leather finishes, they will be considered herein as albuminous-water-dispersed leather finishes containing one or more protein-containing materials and especially albuminous materials such as egg albumin, globulins, casein and similar albumins, together with modifying agents such as the resins, shellac, rosin, cumar, and the waxes, such as paraffin, ceresin, carnauba, montan and the like. One part of albuminous-water-dispersed leather finishes is fortified in accord with this invention by the addition thereto of from ¼ to 1.5 parts of an aqueous emulsion of a polymeric ester of an alpha-substituted acrylic acid.

While polymeric n-butyl methacrylate is preferred as the primary resin constituent of the coating emulsion, polymers of the higher alcohol, esters, namely, propyl, isobutyl, amyl, hexyl, heptyl, octyl alcohol esters of the alpha-substituted acrylic acids and, more particularly, methacrylic acid are likewise suitable. Of this group, the higher alcohol esters, particularly the heptyl and octyl methacrylates, provide a finish somewhat softer in nature and while useful in some cases, the methacrylates of this group, which exhibit properties similar to the properties of n-butyl methacrylate, have desirable properties for some applications. Interpolymers and mixtures of the above-named esters of methacrylic acid may be used. The esters named may also be interpolymerized with the lower alkyl esters of acrylic acid or methacrylic acid, the ratio of the higher ester to the lower ester being such that there results an interpolymer having the desired flexibility, i. e., a flexibility in the order of the flexibility of polymeric n-butyl methacrylate.

In addition, plasticizers which are compatible with the several methacrylate resin polymers noted above may be present in the emulsion. They may be either emulsified with the ester prior to its polymerization or added as an emulsion subsequent to the emulsion polymerization of the ester. For example, the dialkyl phthalates or the phthalic acid esters of the mixtures of alcohols obtained by the catalytic hydrogenation of carbon oxides under elevated temperatures and pressures, the alkoxy alkyl phthalates such as alkoxy ethyl, ethoxy ethyl, alkoxy butyl phthalates, substituted toluene sulfonamides, dibutyl tartrate, tricresyl phosphate, butyl stearate, blown castor oil, either alone or in combination, may be used.

The invention is not limited to the specific emulsifying agents shown in the example since many known agents commonly used in the art will give substantially equivalent results in facilitating the formation of the emulsion and in providing satisfactory stability. Among those agents which may be employed for this purpose are alkyl naphthalene sulfonic acids, their sodium salts, alkali metal salts of fatty acids, sodium petroleum sulfonate, sulfonated castor oil and other sulfonated vegetable oils. In some cases also the inclusion of protective colloids (water colloidable viscous type agents) is of assistance in preparing the emulsions, for example, gum tragacanth, casein, gelatine, glue and gum ghatti.

The present invention is particularly adapted for finishing leather utilized in the shoe industry. It is also of utility in the finishing of leather used in the manufacture of sporting goods, heavy luggage articles, and upholstery for automobiles, furniture and the like.

The improved finish for leather provided according to this invention is superior in appearance and of advantage in that it does not mask or otherwise adversely affect the grain of the material. The finished leather surface is characterized by advantageous properties of water repellency while allowing free passage of moisture, improved adhesion, gloss, elongation, and retention of flexibility on aging. Cold crack tendencies are also greatly reduced in the use of the new finish, thus representing a very important advance in the art.

From a consideration of the above specification it will be appreciated that many changes may be made in the details disclosed therein without departing from the scope of the invention or sacrificing any of the advantages that may be derived therefrom.

I claim:

1. A water-dispersed leather finishing composition comprising an aqueous emulsion of a polymeric alpha-substituted acrylic acid ester of an alcohol containing from 3 to 8 carbon atoms, albuminous material and a modifying agent selected from the group consisting of shellac and wax.

2. A water-dispersed leather finishing composition comprising an aqueous emulsion of polymeric n-butyl methacrylate, albuminous material and a modifying agent selected from the group consisting of shellac and wax.

3. A water-dispersed leather finishing composition comprising an aqueous emulsion of polymeric n-butyl methacrylate, casein, egg albumin, a pigment, a resin and wax.

4. A water-dispersed leather finishing composition comprising approximately 2 parts of an aqueous emulsion of a polymeric alpha-substituted acrylic acid ester of an alcohol containing from 3 to 8 carbon atoms and approximately 3 parts of a water-dispersed leather finish containing a pigment, casein, shellac, wax and albumin.

5. A water-dispersed leather finishing composition comprising from 0.25 to 1.5 parts of an aqueous emulsion of a polymeric-alpha-substituted acrylic acid ester of an alcohol containing from 3 to 8 carbon atoms, per part of an albuminous, water-dispersed leather finish.

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